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Induction Terminal Unit

CM10

Ceiling Mounted Active Chilled Beam

Product Information Release V.3—January 2012



General Information

CM10

STARLINE induction terminal air conditioning units incorporate patented innovative technology that significantly improves performance compared with conventional units. This technology, developed originally to solve noise and capacity problems, common in older induction units, is incorporated with a new range of higher efficiency and lower noise perimeter air conditioning units.

The new *STARLINE* units are ideal replacements for existing induction units. For new installations they form the basis for a low noise, cost effective energy efficient air conditioning system.

STARLINE Working Principle

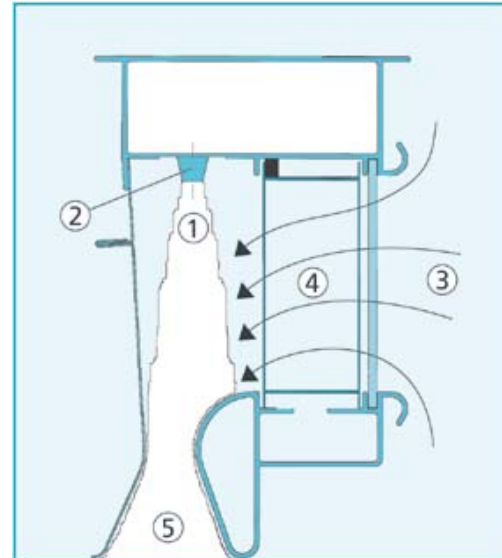
The *STARLINE* perimeter unit relies on the discharge of a primary air stream of cooled and dehumidified air (1) through primary air nozzles (2) at high velocity. The nozzle jets entrain air from the surrounding space of the *STARLINE* unit, inducing that second stream of air (3) to flow into the unit via the secondary air heat exchanger (4), causing the nozzle pressure to be reduced. The mixture of the primary air and the cooled secondary air streams (5), is then discharged into the conditioned space.

The New Nozzle

The new nozzle enhances turbulent mixing of the primary air jet with the surrounding air. This is achieved by a novel design that optimises the perimeter-to-area ratio of the nozzle outlet cross section. The enhanced entrainment of the surrounding air into the jet develops lower pressures in the *STARLINE* unit than that which can be achieved by conventional nozzles, thereby increasing the secondary airflow induced through the secondary heat exchanger. The entrainment ratio (the ratio of the volumetric flow rate of the induced secondary air to that of the primary air through the nozzles), is similarly increased. The more efficient entrainment reduces the stresses within the jet and so reduces the noise generation.

The Internal Ducting

The internal ducting of the *STARLINE* unit forms a profile which produces a smooth contraction to a minimum flow cross section downstream from the secondary heat exchanger. This "Venturi throat" establishes the point of minimum pressure within the *STARLINE* unit and from this point the mixture of the primary air and the entrained secondary air diffuses smoothly toward the outlet from the unit to reach the "datum" pressure in the conditioned space at the outlet plane. Alignment of the jets from the primary air nozzles with the crest or crests of this Venturi throat produces a "wall jet", or "Coanda" effect. This increases the efficiency with which the momentum of the flowing air can be converted to pressure as it diffuses to room pressure at the outlet, avoiding flow separation from the walls of the unit.



STARLINE CM10 – Ceiling Mounted Unit.

The CM10 unit is designed as a ceiling mounted downward discharge unit with compact dimensions to keep ceiling spaces to a minimum height.

Processes in The STARLINE Unit

Within the *STARLINE* units, the two thermal energy elements, **Primary Air** and **Secondary Chilled Water**, are harnessed, to achieve the following:

PRIMARY AIR -

- Provides cooled (or heated) air to offset transmission gains (losses) through the glass, walls, roof, floor etc. as described below:

$$Q_{TS} = Q_{PA}$$

Q_{TS} (W) Transmission Sensible Cooling (Heating) Load

Q_{PA} (W) Primary Air Sensible Cooling (Heating) Capacity

- Provides dehumidified air to offset latent loads.
- Provides ventilation air to satisfy building ventilation regulations.
- Provides motivating energy to induce room air through the secondary air heat exchanger and discharges the air mixture to the room.

SECONDARY CHILLED WATER -

- Provides cooling through the secondary air heat exchanger to offset the variable heat gains from: solar radiation, people, lights, office equipment and other internal sensible cooling loads.

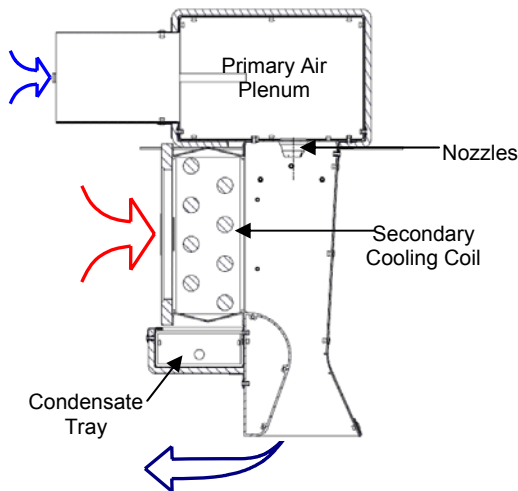
$$Q_{IS} = Q_{SA}$$

Q_{IS} (W) Internal Sensible Cooling Load

Q_{SA} (W) Secondary Air Sensible Cooling Capacity (Secondary Cooling Capacity)

General Information CM10

Dadanco Starline™ CM10 Ceiling Mounted Induction Terminal Units are well suited to hidden active chilled beam applications where the ceiling void is available as a return air plenum and a conventional air grille appearance is part of the design considerations. Dadanco Starline™ CM10 Induction Terminal Units provide efficient, effective and whisper-quiet air conditioning for almost any perimeter zone application at lower static pressures than older induction units.



CM10 Induction Terminal Units are ideally suited for ceiling mounted (in-Ceiling) installations in perimeter zones with supply air discharged away from the façade.

Secondary room air is induced from the conditioned ceiling return air plenum space to provide a compact above-ceiling terminal unit suited for conventional ceiling air grilles and appearance.

CM10 Induction Terminal Units are not suited to installations where the ceiling plenum void is not used as a return air space at equal pressure and temperature as that of the conditioned space as the CM10 unit cannot receive secondary air induced directly from the conditioned space.

Advantages of Induction Terminal Units

Dadanco CM10 Induction Terminal Units supply cooling, heating and the outdoor air required for ventilation in the conditioned space

Compact dimensions and intrinsically smaller duct sizes offer real savings in ceiling space requirements for new construction and HVAC refurbishment projects

Fan power is dramatically reduced. The low primary air quantity is treated by the AHU and distributed at low pressure. The primary air is typically only 30-35% of the total air supplied by Dadanco CM10 Induction Terminal Units due to the use of efficient induction technology.

Secondary air is induced over the secondary heat exchanger, delivering localized cooling, for NO FAN ENERGY REQUIREMENT

CM10 Induction Terminal Units are designed for in-ceiling 'Lay-In' installation in ceiling tile systems or in plasterboard ceilings with builders' continuous grilles

CM10 Induction Terminal Units operate at lower primary air pressures than most conventional induction units

CM10 Induction Terminal Units deliver more sensible cooling capacity using less treated air than any all-air system

CM10 Induction Terminal Units offer 2-stage capacity control through control of secondary water flow separate from primary air control

Noise radiated from Dadanco CM10 Induction Terminal Units is very low...

CM10 Induction Terminal Units require minimal maintenance (no moving parts)

Application Data – CM10

COOLING	40 to 250 W/m ²
LENGTH	Unit lengths from 700mm to 1500mm available on request for any application
FEATURES	Side or End entry primary air connections Integral Condensate Drain tray Secondary Air Lint Screen
HEIGHT	305 - 409mm 4 & 6 Tube High Unit Versions
INSULATION	Thermal insulation for the primary air plenum is standard
GRILLE	Suitable for use with low resistance individual or continuous ceiling grilles (supplied by others)
CONTROLS	CM10 units can be controlled individually or in groups of units
APPLICATIONS:	Dadanco Induction Terminal Unit CM10 is designed specifically for in-ceiling perimeter installations in: - High Efficiency Office Buildings - HVAC Refurbishment Projects - Ceiling mounted induction unit replacements - Schools and Institutional Buildings - Airports

General Information CM10

New Technologies

Dadanco's Starline™ multi-lobe high performance induction nozzles and superior fluid dynamics design are combined into Dadanco CM10 Induction Terminal Units for improved performance and lower noise characteristics.

Rather than relying on high primary air velocities and pressures as with older induction units, Dadanco CM10 range of Induction Terminal Units require less primary air pressure for delivery of equal or greater amounts of primary air to induce higher rates of secondary room air through the secondary cooling coil; delivering improved cooling performance in one simple ceiling mounted package.

All Dadanco Active Chilled Beams incorporate Starline™ Multi-Lobe induction nozzles for enhanced performance per liter/second of primary air delivered.



CM10 Units Installed at Perimeter



CM10 Units with Continuous Grille



CM10 Units with Combined Supply/Return Grille in Plaster Ceiling Margin

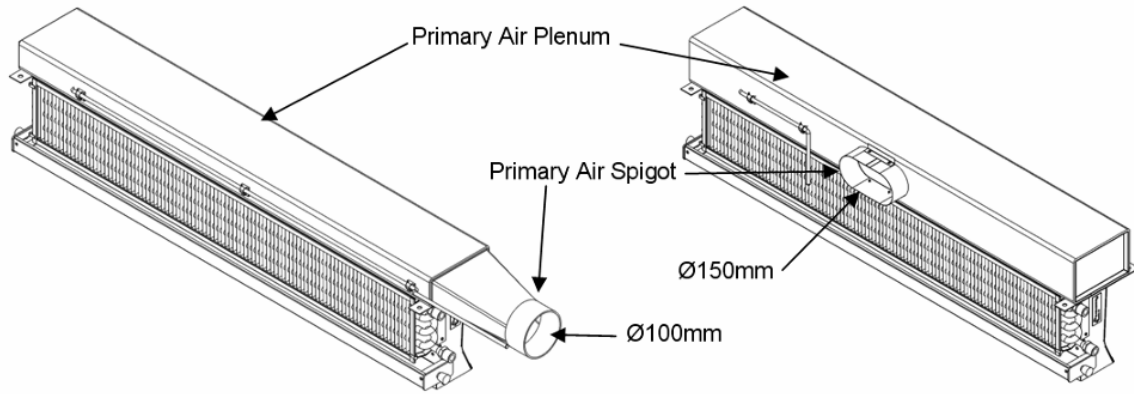


CM10 Units with 'Lay-In' Supply Air Grilles

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PRIMARY AIR CONNECTION OPTIONS



End Entry Primary Air

Side Entry Primary Air

WATER HANDING OPTIONS

Side Entry Primary Air—Left or Right Hand fittings as viewed looking into the secondary coil finned surface

End Entry Primary Air—Left or Right Hand fittings as viewed looking into the secondary coil finned surface

STANDARD FEATURES

- 1/2" male BSP flat face tapered thread fittings
- Insulated condensate drain tray
- Insulated primary air plenum
- Secondary air lint screen (fitted)
- Ø150mm ovalised primary air spigot (Side Entry)
- Ø100mm round primary air spigot transition (End Entry)

OPTIONAL FEATURES

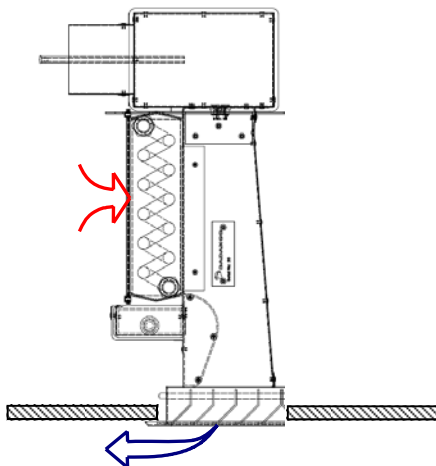
- Plain copper connections or other brass fittings
- Ø150mm 'Rear' entry primary air spigot
- Un-Insulated primary air plenum
- 1-way discharge Supply Air Grille (on request)
- Combined Supply/Return Air Grille (on request)
- 4 tube high & 6 tube high versions

CEILING GRILLE VARIATIONS

Induction terminal units require the use of low resistance supply air grilles to avoid imposing resistance that may decrease the performance of the induction process and unit sensible cooling performance.

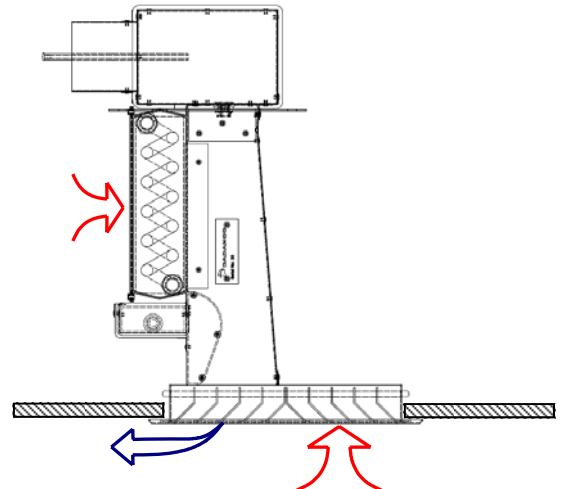
Typically, CM10 units can use single direction supply only grilles where the ceiling space is a return air plenum or combination supply & return air grilles where localised return air near the unit is preferred.

Supply Air Only Grille



Low resistance supply air grilles can be used where the ceiling plenum is a return air space through light fixtures or other return air openings

Combined Supply & Return Air Grille

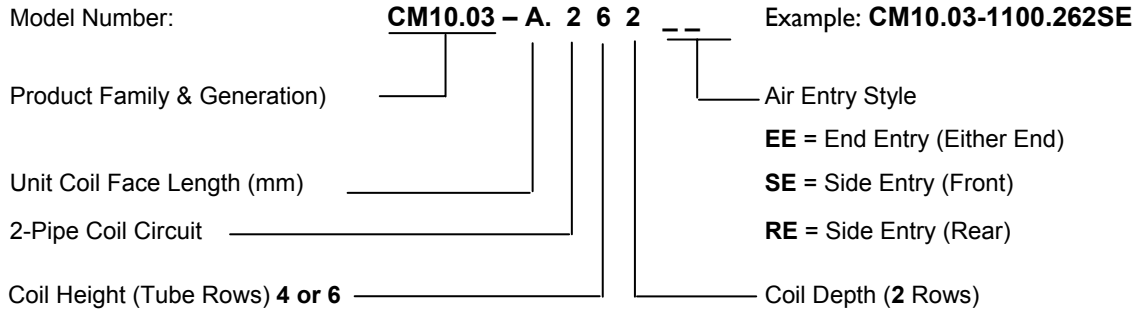


Low resistance combination supply & return air grilles can be used where the ceiling plenum is a return air space and more localised return air to the units is needed



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UNIT NOMENCLATURE



General Product Technical Data

MODEL	Coil Finned Length	Air Plenum Length	H = Unit Height (mm) Without Air Grille		Max. Unit Width (mm)	Primary Air Flow Range (≤250Pa)	Sensible Cooling Capacity Range
	(mm)	(mm)	4 Tube	6 Tube		(L/s) *	(W) *
CM10.03-0700.--	700	800	301 or 346	364 or 409	180	10 ~ 29	466 ~ 1071
CM10.03-0800.--	800	900				12 ~ 33	548 ~ 1208
CM10.03-0900.--	900	1000				13 ~ 36	629 ~ 1340
CM10.03-1000.--	1000	1100				15 ~ 41	711 ~ 1503
CM10.03-1100.--	1100	1200				16 ~ 46	715 ~ 1650
CM10.03-1200.--	1200	1300				18 ~ 50	846 ~ 1780
CM10.03-1300.--	1300	1400				20 ~ 53	815 ~ 1905
CM10.03-1400.--	1400	1500				22 ~ 58	950 ~ 2036
CM10.03-1500.--	1500	1600				23 ~ 62	1031 ~ 2162

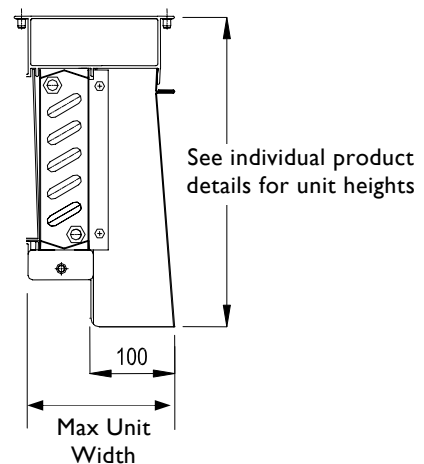
NOTE: Nominal cooling capacities @ 24°C room air, 12°C primary air, 13°C Secondary Chilled Water & 0.09 L/s Water Flow

* Minimum primary air & capacity from 4TH unit at ≤ 100Pa. Maximum primary air & capacity from 6TH unit ≤ 250Pa.

Different performance results can be achieved for varying secondary water flow rates, entering water temperatures, primary air conditions and primary air static pressures.

For selections at conditions other than those above please refer to selection tables or contact DADANCO for further assistance.

Unit Model	Unit Weight (kg)	
	4 Row	6 Row
CM10.03 -0700.--	11.2	11.6
CM10.03 -0800.--	12.7	13.5
CM10.03 - 900.--	14.3	14.8
CM10.03 -1000.--	15.9	16.7
CM10.03 -1100.--	17.5	18.2
CM10.03 -1200.--	19.1	19.8
CM10.03 -1300.--	20.7	21.5
CM10.03 -1400.--	22.3	23.2
CM10.03 -1500.--	23.9	24.9



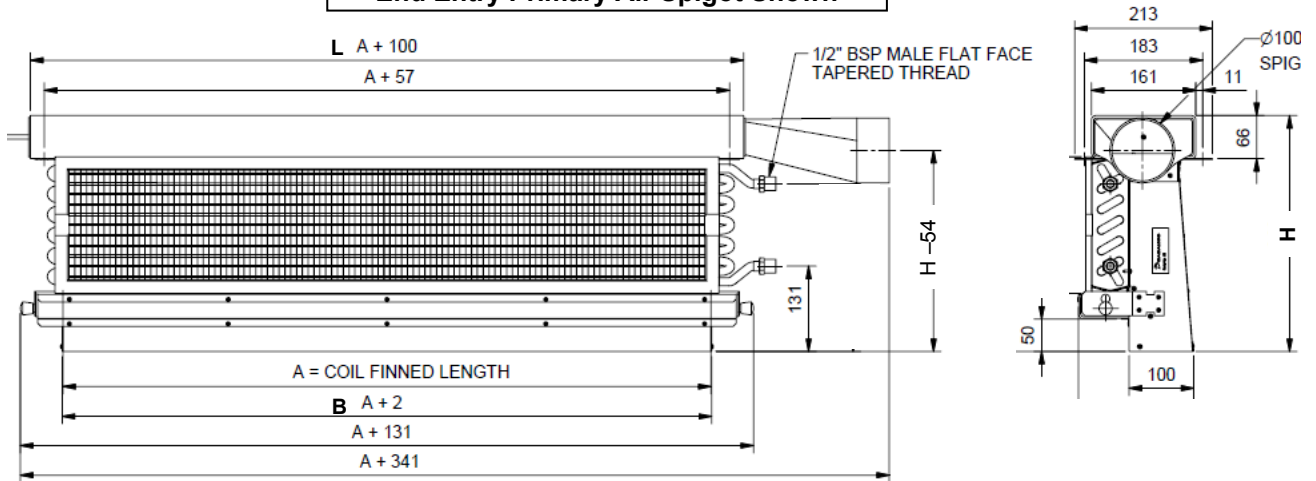
SUPPLY AIR OPENING & UNIT HEIGHT

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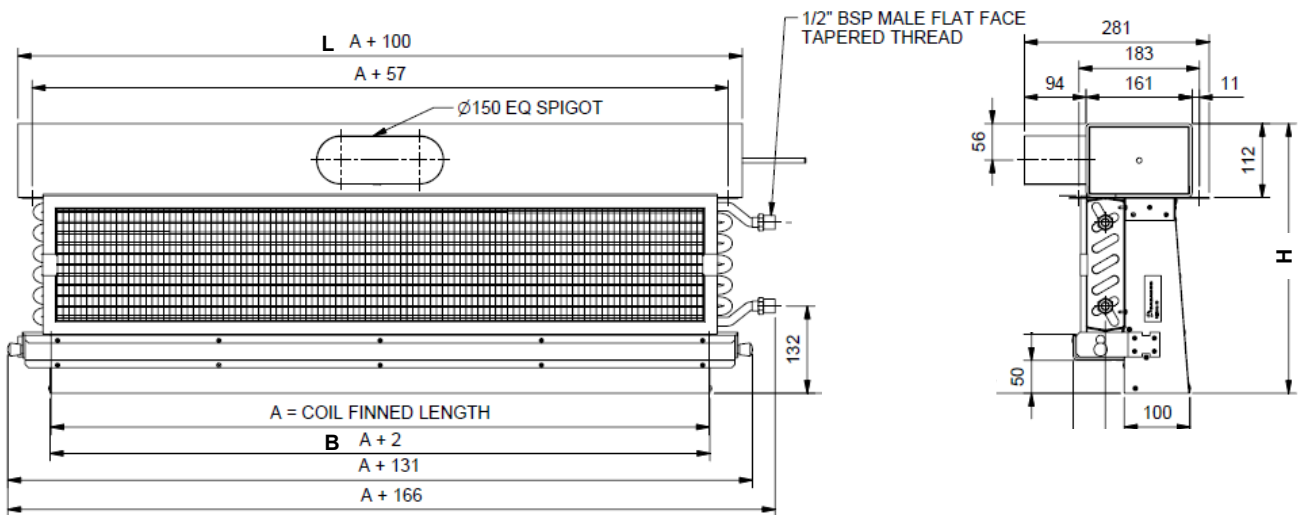
STARLINE

End Entry Primary Air Spigot Shown



Unit Model	Coil Finned Length A (mm)	Air Plenum Length L (mm)	Air Discharge Length B (mm)	Overall Length (mm)	H = Unit Height (mm)	
					4 Row	6 Row
CM10-700.--	700	800	724	1028	301	364
CM10-800.--	800	900	824	1128		
CM10-900.--	900	1000	924	1228		
CM10-1000.--	1000	1100	1024	1328		
CM10-1100.--	1100	1200	1124	1378		
CM10-1200.--	1200	1300	1224	1528		
CM10-1300.--	1300	1400	1324	1628		
CM10-1400.--	1400	1500	1424	1728		
CM10-1500.--	1500	1600	1524	1828		

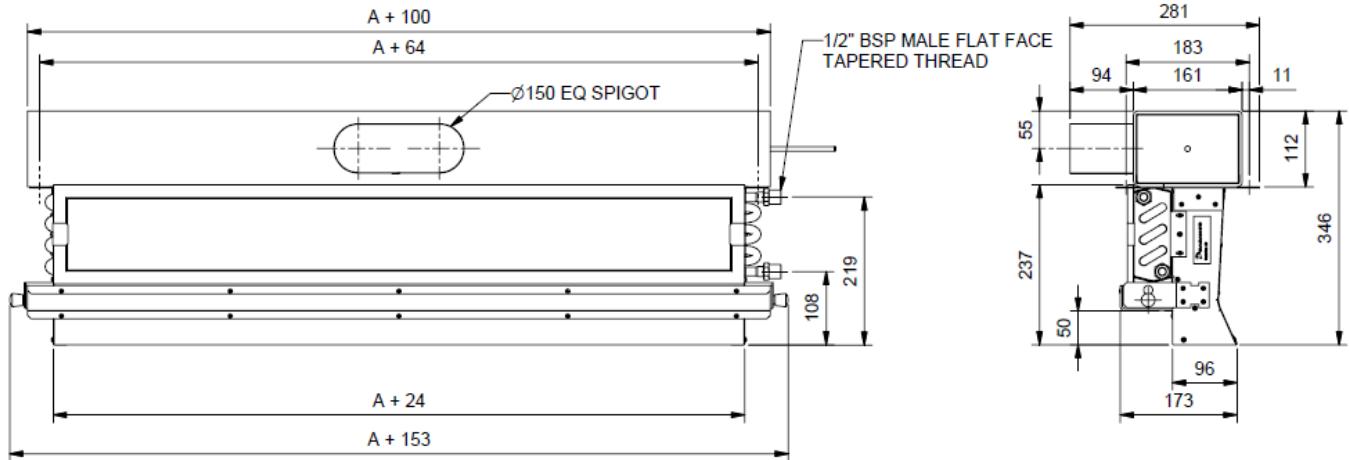
Side Entry Primary Air Spigot Shown



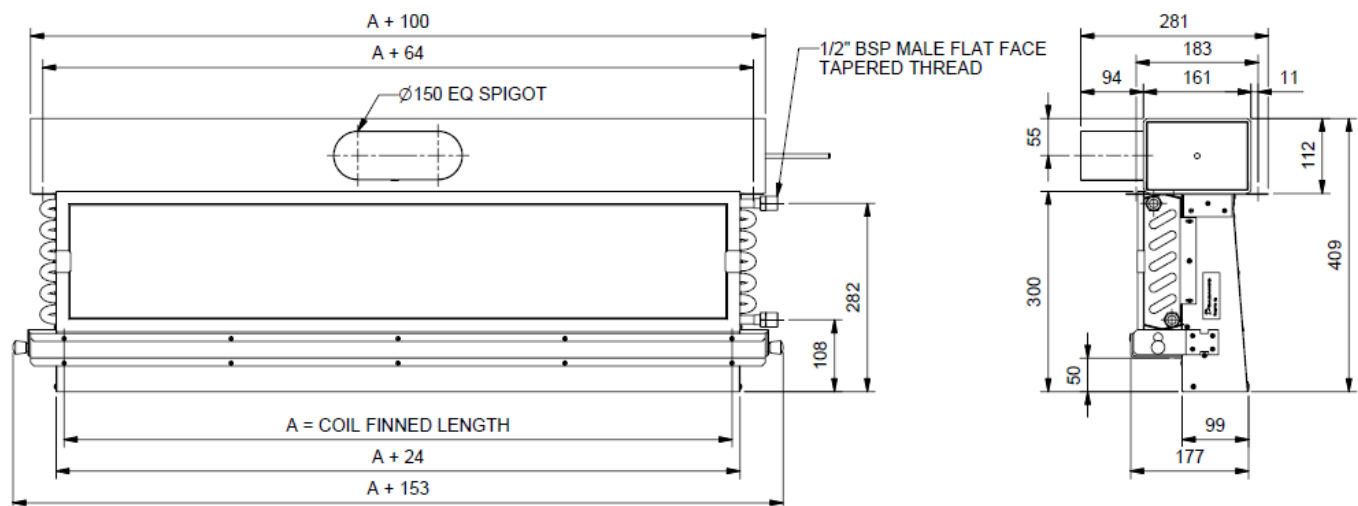
Unit Model	Coil Finned Length A (mm)	Air Plenum Length L (mm)	Air Discharge Length B (mm)	Overall Length (mm)	H = Unit Height (mm)	
					4 Row	6 Row
CM10-0700.--	700	800	724	853	346	409
CM10-0800.--	800	900	824	953		
CM10-0900.--	900	1000	924	1053		
CM10-1000.--	1000	1100	1024	1153		
CM10-1100.--	1100	1200	1124	1253		
CM10-1200.--	1200	1300	1224	1353		
CM10-1300.--	1300	1400	1324	1453		
CM10-1400.--	1400	1500	1424	1553		
CM10-1500.--	1500	1600	1524	163		



CM10-A.242 (4 Tube High Coil)



CM10-A.262 (6 Tube High Coil)



NOTE: CM10 ceiling mounted terminal units with 'Side Entry' ovalised primary air spigots shown above. For unit package drawings of CM10 ceiling mounted terminal units with $\varnothing 100$ mm round spigot transitions, please ask Dadanco for assistance.

WATER HANDING OPTIONS

- Side Entry Primary Air — Left or Right Hand water fittings as viewed from the coil face and primary air spigot side
- End Entry Primary Air — Left or Right Hand water fittings as viewed looking into the secondary coil finned surface
- Rear Entry Primary Air — Left or Right Hand water fittings as viewed looking into the secondary coil finned surface

STANDARD FEATURES

- $1/2"$ male BSP flat face tapered thread fittings
- 2-Pipe cooling coil configuration
- Secondary air lint screen (fitted to coil face)
- Integral condensate tray
- $\varnothing 150$ mm ovalised primary air spigot
- Side entry primary air connection
- Insulated primary air plenum
- Natural galvanised steel finish

OPTIONAL FEATURES

- Plain copper connections or other brass fittings
- $\varnothing 100$ mm round primary air spigot/transition
- End entry primary air spigot/transition
- Rear entry $\varnothing 150$ mm ovalised primary air spigot
- Un-Insulated primary air plenum (Special Request Only)
- 1-way 4 active slot Supply Air only grille
- Combined Supply/Return air grille

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CM10 Guide Specification

GUIDE SPECIFICATION – CM10 Ceiling Mounted Induction Terminal Unit

Scope

Supply DADANCO ceiling mounted induction terminal units type STARLINE CM10-XXXX.XXX, or equal and approved, fitted with low-noise, high efficiency patented nozzles capable of delivering the primary air quantities as listed in the specification schedule.

Connect the units to the primary air duct and secondary water circuit in the configuration shown on the drawings.

Construction

The STARLINE CM10.03 induction terminal unit shall be manufactured to provide a compact unit with a primary air plenum, mounting support points, air entrainment chamber with supply air opening, secondary heat exchanger coil with condensate drain tray and an inlet air lint screen (where specified).

Plenum: The medium pressure primary air plenum shall be manufactured of 0.8mm galvanised sheet steel designed to incorporate DADANCO multi lobe induction nozzles of the nominated number and size to discharge the specified primary air quantity into the air entrainment chamber.

Insulation (if required): Self adhesive, fire retardant thermal insulation to the exterior of the primary air plenum and condensate tray to prevent condensation forming on the outside of the unit.

Nozzles shall be DADANCO multi-lobed induction nozzles of flexible fire retardant polymer, designed for low noise generation and rapid secondary air entrainment.

Where specified, the unit shall be provided with a front facing metal fabricated ovalised primary air spigot collar of 100mm or 150mm equivalent diameter suitable for at-site connection of primary air flexible duct.

The secondary air entrainment chamber shall be constructed of galvanised sheet steel end panels and back plate sealed as an integral part to the primary air plenum and secondary heat exchanger. The entrainment chamber will facilitate mounting of the secondary heat exchanger coil above a condensate drain tray capable of collecting and discharging secondary air condensate in humid conditions if specified.

The unit shall incorporate a removable secondary air heat exchanger coil of the nominated tube height and number of tube rows designed to process the specified secondary air quantity into the entrainment chamber to obtain the specified secondary sensible cooling capacity. The coil construction shall be of 12.7mm seamless copper tubes mechanically expanded into 0.145mm rippled edge aluminium fins spaced at the specified fin density per meter with drawn collars and galvanised end plates with top and bottom support frames. Coils will be fitted with ½" BSP male tapered thread flat face inlet and outlet fittings at one end of the coil.

Secondary coil capacities shall be equal to the specified secondary air sensible cooling capacity when operated at the scheduled secondary chilled water flow and inlet temperature.

Secondary coil maximum recommended site test pressure not to exceed 2500 kPa (25 Bar) with continuous maximum recommended operating pressure of 1680 kPa (16.8 Bar). Coil to be factory pressure tested to 2500 kPa and conform to a burst pressure rating of 13,000 kPa (130 Bar) at 50°C.

The unit shall incorporate a commissioning tube to measure the static pressure in the plenum. The tube is to be made from plastic and be sealed air tight into the plenum.

Lint screen (if required): Fit a serviceable lint screen with frame over the secondary heat exchanger. Fabricate the lint screen from fine plastic fabric mesh, as specified, held in a rectangular aluminium frame. Provide fixing clips to secure the lint screen frame to the secondary coil.

The unit shall be mounted by its plenum mounting points to a suitable building member or support structure in a manner to ensure unrestricted secondary air entry to the unit, secure level alignment and leak free connection to the supply air ductwork and secondary water circuits.

The unit shall be aligned in the ceiling to a low resistance supply air ceiling outlet capable of discharging the total supply air grille in one direction. Where specified, a combination supply and return air ceiling grille shall be used.

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CM10 Active Chilled Beam Selection Tables

The following tables provide selection data for CM10 unit sensible cooling performance across a range of primary air pressures and air quantities, primary air ΔT and secondary air to entering water ΔT for fixed value secondary water ΔT of 2K or 3K.

Selections where primary air quantity and operating parameters are known

Step 1: Choose 2-Pipe CM10 Active Chilled Beam and locate the correct table for the preferred unit length

Step 2: Determine the design secondary chilled water temperature differential (2K or 3K) — locate tables based on this value

Step 3: Determine the design primary air quantity and choose the value from one of the selection tables

Step 4: Determine the design primary air ΔT_{PA} (Room Air—Primary Air) from the Primary Air Cooling header row and select the value where primary air quantity from Step 3 and primary air ΔT_{PA} from Step 4 intersect.

Steps 3 & 4 will determine the primary air sensible cooling capacity (W)

Step 5: Determine the value where primary air quantity from Step 3 and primary air ΔT_{PA} from Step 4 intersect.

Step 5 will determine the primary air sensible cooling capacity (W)

Step 6: Determine the design Room Air—Entering Secondary Water ΔT_{SCA} from the correct water ΔT table header row.

Move vertically from the selected water ΔT_{SCA} value to the horizontal row corresponding to the primary air quantity and sensible cooling capacity selections in Steps 3 and 5 to determine Secondary Air Sensible Cooling (Coil Cooling) at that value.

NOTE: Secondary chilled water flow rate appears below the coil cooling capacity as the value in smaller font

Chilled Beam sensible cooling is the sum of Primary Air Cooling and Secondary Coil Cooling (267 + 545 = 812W)

Example:

CM10-1100.242 1-way Active Chilled Beam 2-pipe																				Step 1													
Primary Air	Supply Air	Static Pressure	Step 2												Secondary Water $\Delta T = 2K$		Secondary Water $\Delta T = 3K$																
			Primary Air Cooling (W)												Secondary Air Cooling (W)		Secondary Air Cooling (W)																
			ΔT_{PA} (T _{Room} - T _{Primary Air})												ΔT_{SCA} (T _{Room} - T _{Entering Secondary Water})		ΔT_{SCA} (T _{Room} - T _{Entering Secondary Water})																
L/s	L/s	Pa	8	9	10	11	12	13	14	8	9	10	11	12	Q _s	8	9	10	11	12	Q _s												
Configuration: 26-SN																				Step 4		Step 6											
15.0	63	128	-146	-164	-182	-200	-218	-237	-255	-317	-377	-437	-495	-554	-655	-275	-318	-360	-414	-475	-578												
										0.038	0.045	0.052	0.059	0.066		0.03*	0.03*	0.03*	0.033	0.038													
17.5	76	172	-170	-191	-212	-234	-255	-276	-297	-383	-452	-520	-587	-653	-775	-319	-368	-435	-505	-574	-690												
										0.046	0.054	0.062	0.07	0.078		0.03*	0.03*	0.035	0.04	0.046													
Configuration: 30-SN																				Step 4		Step 6											
17.5	70	131	-170	-191	-212	-234	-255	-276	-297	-345	-409	-472	-535	-596	-727	-294	-339	-388	-453	-517	-643												
										0.041	0.049	0.057	0.064	0.071		0.03*	0.03*	0.031	0.036	0.041													
20.0	81	149	-194	-218	-243	-267	-291	-315	-340	-403	-474	-545	-614	-683	-846	-332	-386	-459	-532	-604	-750												
										0.048	0.057	0.065	0.074	0.082		0.03*	0.031	0.037	0.043	0.048													
Configuration: 36-SN																				Step 3		Step 5						Step 6					
17.5	60	92	-170	-191	-212	-234	-255	-276	-297	-274	-329	-383	-437	-490	-638	-248	-286	-324	-363	-412	-579												
										0.033	0.039	0.046	0.052	0.059		0.03*	0.03*	0.03*	0.03*	0.033													
20.0	71	119	-194	-218	-243	-267	-291	-315	-340	-334	-397	-458	-519	-580	-749	-287	-331	-375	-438	-501	-666												
										0.04	0.048	0.055	0.062	0.069		0.03*	0.03*	0.03*	0.035	0.04													
22.5	81	149	-218	-246	-273	-300	-328	-355	-382	-386	-455	-523	-591	-658	-851	-321	-370	-438	-509	-579	-766												
										0.046	0.055	0.063	0.071	0.079		0.03*	0.03*	0.035	0.041	0.046													

Water flow value of 0.03* = minimum allowed water flow rate for all ACB models

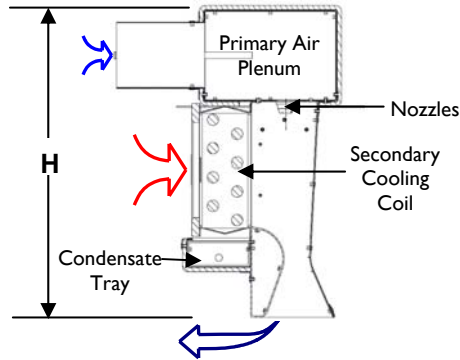
Q_s value in bold font = Quick Select value based on Room Air—Primary Air ΔT of 12°C & Room Air - Entering Secondary Water ΔT of 10°C for the corresponding primary air quantity and secondary water design ΔT of 2K or 3K

NOTE: Higher or lower secondary coil capacities can be achieved for all ACB models for higher or lower secondary water flow rates and resulting changes in water ΔT . For alternative or more detailed selections at different conditions, primary air quantities or secondary water flow rates; contact Dadanco for assistance.

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CM10 Active Chilled Beam Selection Tables



1-Way Discharge Ceiling Mounted Unit
(4 Tube High Unit shown)



CM10 Unit Height (H)	
CM10-0800.242 4 Tube High Coil	CM10-0800.262 6 Tube High Coil
346mm	409mm



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CM10-0800.242 900mm Long 1-way Active Chilled Beam 2-pipe

Primary Air	Supply Air	Static Pressure	Primary Air Cooling (W)							Secondary Water $\Delta T = 2K$					Q_s (W)	Secondary Water $\Delta T = 3K$					Q_s (W)				
			$\Delta T_{PA} (T_{Room} - T_{Primary Air})$							Secondary Air Cooling (W)						Secondary Air Cooling (W)									
L/s	L/s	Pa	8	9	10	11	12	13	14	8	9	10	11	12	8	9	10	11	12	8	9	10	11	12	
Configuration: 18-SN																									
10.0	42	119	-97	-109	-121	-133	-146	-158	-170	-198	-226	-256	-297	-337	-402	-184	-212	-241	-269	-297	-387				
										0.03*	0.03*	0.031	0.036	0.04		0.03*	0.03*	0.03*	0.03*	0.03*					
12.5	54	183	-121	-136	-152	-167	-182	-197	-212	-246	-295	-345	-395	-444	-527	-229	-264	-299	-334	-369	-481				
										0.03*	0.035	0.041	0.047	0.053		0.03*	0.03*	0.03*	0.03*	0.03*					
Configuration: 22-SN																									
10.0	37	81	-97	-109	-121	-133	-146	-158	-170	-170	-194	-218	-243	-274	-364	-158	-182	-206	-230	-255	-352				
										0.03*	0.03*	0.03*	0.03*	0.033		0.03*	0.03*	0.03*	0.03*	0.03*					
12.5	48	124	-121	-136	-152	-167	-182	-197	-212	-219	-250	-295	-340	-384	-477	-203	-235	-266	-297	-329	-448				
										0.03*	0.03*	0.035	0.041	0.046		0.03*	0.03*	0.03*	0.03*	0.03*					
15.0	60	177	-146	-164	-182	-200	-218	-237	-255	-261	-314	-367	-419	-470	-585	-240	-277	-314	-350	-392	-532				
										0.031	0.038	0.044	0.05	0.056		0.03*	0.03*	0.03*	0.03*	0.031					
Configuration: 26-SN																									
12.5	42	90	-121	-136	-152	-167	-182	-197	-212	-185	-212	-238	-271	-309	-420	-172	-199	-225	-252	-278	-407				
										0.03*	0.03*	0.03*	0.032	0.037		0.03*	0.03*	0.03*	0.03*	0.03*					
15.0	52	128	-146	-164	-182	-200	-218	-237	-255	-225	-261	-307	-353	-398	-525	-209	-241	-274	-306	-338	-492				
										0.03*	0.031	0.037	0.042	0.048		0.03*	0.03*	0.03*	0.03*	0.03*					
17.5	63	172	-170	-191	-212	-234	-255	-276	-297	-262	-315	-368	-420	-472	-623	-240	-277	-314	-351	-393	-569				
										0.031	0.038	0.044	0.05	0.057		0.03*	0.03*	0.03*	0.03*	0.031					
Configuration: 22-MN																									
15.0	49	94	-146	-164	-182	-200	-218	-237	-255	-209	-239	-277	-320	-362	-495	-194	-224	-254	-284	-314	-472				
										0.03*	0.03*	0.033	0.038	0.043		0.03*	0.03*	0.03*	0.03*	0.03*					
17.5	58	126	-170	-191	-212	-234	-255	-276	-297	-242	-287	-337	-386	-435	-592	-225	-259	-294	-328	-363	-549				
										0.03*	0.034	0.04	0.046	0.052		0.03*	0.03*	0.03*	0.03*	0.03*					
20.0	68	163	-194	-218	-243	-267	-291	-315	-340	-278	-333	-388	-443	-496	-679	-251	-289	-328	-366	-417	-619				
										0.033	0.04	0.047	0.053	0.059		0.03*	0.03*	0.03*	0.03*	0.033					
Configuration: 26-MN																									
17.5	50	91	-170	-191	-212	-234	-255	-276	-297	-202	-231	-264	-305	-346	-519	-188	-216	-245	-274	-303	-500				
										0.03*	0.03*	0.032	0.037	0.041		0.03*	0.03*	0.03*	0.03*	0.03*					
20.0	58	118	-194	-218	-243	-267	-291	-315	-340	-231	-269	-316	-363	-410	-607	-214	-247	-280	-313	-346	-571				
										0.03*	0.032	0.038	0.044	0.049		0.03*	0.03*	0.03*	0.03*	0.03*					
22.5	67	148	-218	-246	-273	-300	-328	-355	-382	-258	-311	-363	-414	-466	-691	-238	-274	-311	-347	-387	-639				
										0.031	0.037	0.044	0.05	0.056		0.03*	0.03*	0.03*	0.03*	0.031					
25.0	75	181	-243	-273	-303	-334	-364	-394	-425	-291	-347	-404	-460	-515	-768	-259	-298	-338	-379	-436	-702				
										0.035	0.042	0.048	0.055	0.062		0.03*	0.03*	0.03*	0.03*	0.035					

DISCLAIMER

While every effort is made to ensure the details contained herein are kept up to date, in the interests of ongoing product development, Dadanco reserves the right to alter the information without notice

CM10 Active Chilled Beam Selection Tables

CM10-1100.242 1200mm Long 1-way Active Chilled Beam 2-pipe

Primary Air L/s	Supply Air L/s	Static Pressure Pa	Primary Air Cooling (W)							Secondary Water $\Delta T = 2K$					Secondary Water $\Delta T = 3K$										
			$\Delta T_{PA} (T_{Room} - T_{Primary Air})$							Secondary Air Cooling (W) Secondary Water Flow (L/s)					Secondary Air Cooling (W) Secondary Water Flow (L/s)										
			8	9	10	11	12	13	14	$\Delta T_{SCA} (T_{Room} - T_{Entering Secondary Water})$					$\Delta T_{SCA} (T_{Room} - T_{Entering Secondary Water})$										
														Q_s (W)											Q_s (W)
Configuration: 26-SN																									
15.0	63	128	-146	-164	-182	-200	-218	-237	-255	-317	-377	-437	-495	-554	-655	-275	-318	-360	-414	-475	-578				
										0.038	0.045	0.052	0.059	0.066											
17.5	76	172	-170	-191	-212	-234	-255	-276	-297	-383	-452	-520	-587	-653	-775	-319	-368	-435	-505	-574	-690				
										0.046	0.054	0.062	0.07	0.078											
Configuration: 30-SN																									
15.0	58	97	-146	-164	-182	-200	-218	-237	-255	-275	-329	-383	-437	-490	-601	-248	-286	-325	-363	-412	-543				
										0.033	0.039	0.046	0.052	0.059											
17.5	70	131	-170	-191	-212	-234	-255	-276	-297	-345	-409	-472	-535	-596	-727	-294	-339	-388	-453	-517	-643				
										0.041	0.049	0.057	0.064	0.071											
20.0	81	169	-194	-218	-243	-267	-291	-315	-340	-403	-474	-545	-614	-683	-836	-332	-386	-459	-532	-604	-750				
										0.048	0.057	0.065	0.074	0.082											
Configuration: 36-SN																									
17.5	60	92	-170	-191	-212	-234	-255	-276	-297	-274	-329	-383	-437	-490	-638	-248	-286	-324	-363	-412	-579				
										0.033	0.039	0.046	0.052	0.059											
20.0	71	119	-194	-218	-243	-267	-291	-315	-340	-334	-397	-458	-519	-580	-749	-287	-331	-375	-438	-501	-666				
										0.04	0.048	0.055	0.062	0.069											
22.5	81	149	-218	-246	-273	-300	-328	-355	-382	-386	-455	-523	-591	-658	-851	-321	-370	-438	-509	-579	-766				
										0.046	0.055	0.063	0.071	0.079											
25.0	92	183	-243	-273	-303	-334	-364	-394	-425	-432	-507	-581	-654	-726	-945	-351	-417	-495	-572	-648	-859				
										0.052	0.061	0.07	0.078	0.087											
Configuration: 28-MN																									
20.0	69	102	-194	-218	-243	-267	-291	-315	-340	-324	-385	-446	-506	-565	-737	-280	-323	-366	-424	-486	-657				
										0.039	0.046	0.053	0.061	0.068											
22.5	79	128	-218	-246	-273	-300	-328	-355	-382	-375	-443	-510	-576	-641	-838	-314	-362	-425	-494	-562	-753				
										0.045	0.053	0.061	0.069	0.077											
25.0	89	157	-243	-273	-303	-334	-364	-394	-425	-420	-494	-566	-638	-709	-930	-343	-405	-481	-556	-630	-845				
										0.05	0.059	0.068	0.076	0.085											
27.5	100	188	-267	-300	-334	-367	-400	-434	-467	-461	-539	-617	-694	-770	-1017	-370	-449	-531	-611	-691	-931				
										0.055	0.065	0.074	0.083	0.092											
Configuration: 32-MN																									
22.5	73	99	-218	-246	-273	-300	-328	-355	-382	-331	-393	-455	-515	-575	-783	-285	-329	-372	-433	-496	-700				
										0.04	0.047	0.054	0.062	0.069											
25.0	82	122	-243	-273	-303	-334	-364	-394	-425	-376	-444	-511	-577	-642	-875	-314	-362	-426	-495	-564	-790				
										0.045	0.053	0.061	0.069	0.077											
27.5	91	146	-267	-300	-334	-367	-400	-434	-467	-416	-489	-561	-632	-703	-961	-341	-401	-476	-550	-625	-876				
										0.05	0.059	0.067	0.076	0.084											
30.0	101	172	-291	-328	-364	-400	-437	-473	-509	-453	-531	-607	-683	-758	-1044	-365	-441	-521	-601	-679	-958				
										0.054	0.064	0.073	0.082	0.091											
Configuration: 36-MN																									
27.5	82	117	-267	-300	-334	-367	-400	-434	-467	-360	-426	-491	-555	-619	-891	-304	-350	-406	-473	-540	-806				
										0.043	0.051	0.059	0.067	0.074											
30.0	90	138	-291	-328	-364	-400	-437	-473	-509	-397	-468	-538	-606	-675	-975	-328	-380	-452	-524	-596	-889				
										0.048	0.056	0.064	0.073	0.081											
32.5	99	160	-315	-355	-394	-434	-473	-512	-552	-431	-506	-580	-653	-726	-1053	-351	-417	-494	-571	-647	-967				
										0.052	0.061	0.07	0.078	0.087											
35.0	108	185	-340	-382	-425	-467	-509	-552	-594	-463	-542	-619	-696	-773	-1128	-372	-452	-533	-614	-694	-1042				
										0.055	0.065	0.074	0.083	0.093											

Water flow value of 0.03* = minimum allowed water flow rate for all ACB models

Q_s value in bold font = Quick Select value based on Room Air—Primary Air ΔT of 12°C & Room Air - Entering Secondary Water ΔT of 10°C for the corresponding primary air quantity and secondary water design ΔT of 2K or 3K

NOTE: Higher or lower secondary coil capacities can be achieved for all ACB models for higher or lower secondary water flow rates and resulting changes in water ΔT . For alternative or more detailed selections at different conditions, primary air quantities or secondary water flow rates; contact Dadanco for assistance.

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CM10-1400.242 1500mm Long 1-way Active Chilled Beam 2-pipe

Primary Air	Supply Air	Static Pressure	Primary Air Cooling (W)							Secondary Water $\Delta T = 2K$					Q_s (W)	Secondary Water $\Delta T = 3K$					Q_s (W)
			$\Delta T_{PA} (T_{Room} - T_{Primary Air})$							Secondary Air Cooling (W)						Secondary Air Cooling (W)					
			8	9	10	11	12	13	14	Secondary Water Flow (L/s)						Secondary Water Flow (L/s)					
L/s	L/s	Pa	8	9	10	11	12	13	14	8	9	10	11	12	8	9	10	11	12		
Configuration: 36-SN																					
20.0	82	119	-194	-218	-243	-267	-291	-315	-340	-435	-511	-585	-658	-731	-876	-353	-421	-499	-576	-653	-790
										0.052	0.061	0.07	0.079	0.088		0.03*	0.034	0.04	0.046	0.052	
22.5	94	149	-218	-246	-273	-300	-328	-355	-382	-501	-585	-668	-750	-831	-996	-407	-494	-581	-667	-752	-909
										0.06	0.07	0.08	0.09	0.1		0.032	0.04	0.046	0.053	0.06	
Configuration: 39-SN																					
20.0	77	102	-194	-218	-243	-267	-291	-315	-340	-403	-474	-544	-614	-682	-835	-332	-386	-459	-531	-604	-750
										0.048	0.057	0.065	0.074	0.082		0.03*	0.031	0.037	0.042	0.048	
22.5	89	128	-218	-246	-273	-300	-328	-355	-382	-471	-551	-630	-708	-786	-958	-378	-461	-544	-626	-707	-872
										0.056	0.066	0.075	0.085	0.094		0.03*	0.037	0.043	0.05	0.056	
25.0	101	157	-243	-273	-303	-334	-364	-394	-425	-529	-616	-702	-788	-874	-1066	-433	-525	-615	-705	-793	-979
										0.063	0.074	0.084	0.094	0.105		0.035	0.042	0.049	0.056	0.063	
Configuration: 48-SN																					
22.5	76	86	-218	-246	-273	-300	-328	-355	-382	-367	-433	-499	-564	-628	-827	-308	-355	-414	-482	-550	-742
										0.044	0.052	0.06	0.068	0.075		0.03*	0.03*	0.033	0.039	0.044	
25.0	86	105	-243	-273	-303	-334	-364	-394	-425	-427	-501	-575	-647	-719	-939	-348	-412	-489	-565	-640	-853
										0.051	0.06	0.069	0.078	0.086		0.03*	0.033	0.039	0.045	0.051	
27.5	96	126	-267	-300	-334	-367	-400	-434	-467	-481	-562	-642	-721	-800	-1042	-387	-472	-556	-639	-721	-956
										0.058	0.067	0.077	0.086	0.096		0.031	0.038	0.044	0.051	0.058	
30.0	106	149	-291	-328	-364	-400	-437	-473	-509	-529	-617	-703	-789	-874	-1140	-434	-525	-616	-706	-794	-1053
										0.063	0.074	0.084	0.094	0.105		0.035	0.042	0.049	0.056	0.063	
Configuration: 38-MN																					
22.5	75	72	-218	-246	-273	-300	-328	-355	-382	-357	-422	-487	-551	-614	-815	-302	-348	-402	-469	-535	-730
										0.043	0.051	0.058	0.066	0.074		0.03*	0.03*	0.032	0.037	0.043	
25.0	84	88	-243	-273	-303	-334	-364	-394	-425	-415	-488	-560	-631	-702	-924	-340	-400	-475	-549	-623	-839
										0.05	0.059	0.067	0.076	0.084		0.03*	0.032	0.038	0.044	0.05	
27.5	94	105	-267	-300	-334	-367	-400	-434	-467	-468	-548	-626	-704	-781	-1026	-375	-457	-540	-621	-702	-940
										0.056	0.066	0.075	0.084	0.094		0.03*	0.037	0.043	0.05	0.056	
30.0	104	124	-291	-328	-364	-400	-437	-473	-509	-516	-601	-686	-770	-853	-1123	-421	-510	-599	-687	-773	-1036
										0.062	0.072	0.082	0.092	0.102		0.034	0.041	0.048	0.055	0.062	
32.5	114	145	-315	-355	-394	-434	-473	-512	-552	-559	-650	-740	-830	-920	-1213	-462	-558	-653	-746	-838	-1126
										0.067	0.078	0.089	0.099	0.11		0.037	0.045	0.052	0.06	0.067	
35.0	124	167	-340	-382	-425	-467	-509	-552	-594	-599	-695	-790	-886	-982	-1299	-501	-602	-702	-801	-898	-1211
										0.072	0.083	0.095	0.106	0.118		0.04	0.048	0.056	0.064	0.072	
Configuration: 41-MN																					
27.5	89	91	-267	-300	-334	-367	-400	-434	-467	-433	-508	-582	-655	-728	-982	-352	-419	-496	-573	-649	-896
										0.052	0.061	0.07	0.079	0.087		0.03*	0.033	0.04	0.046	0.052	
30.0	98	107	-291	-328	-364	-400	-437	-473	-509	-480	-562	-642	-721	-800	-1079	-387	-471	-555	-639	-721	-992
										0.058	0.067	0.077	0.086	0.096		0.031	0.038	0.044	0.051	0.058	
32.5	107	125	-315	-355	-394	-434	-473	-512	-552	-524	-610	-696	-781	-866	-1169	-428	-519	-609	-698	-786	-1082
										0.063	0.073	0.083	0.094	0.104		0.034	0.042	0.049	0.056	0.063	
35.0	117	144	-340	-382	-425	-467	-509	-552	-594	-563	-655	-746	-836	-927	-1255	-467	-563	-659	-753	-845	-1168
										0.068	0.078	0.089	0.1	0.111		0.037	0.045	0.053	0.06	0.068	
37.5	126	164	-364	-409	-455	-500	-546	-591	-637	-600	-697	-792	-888	-984	-1338	-503	-604	-704	-803	-900	-1250
										0.072	0.083	0.095	0.106	0.118		0.04	0.048	0.056	0.064	0.072	
Configuration: 44-MN																					
30.0	92	94	-291	-328	-364	-400	-437	-473	-509	-439	-515	-590	-664	-737	-1027	-356	-426	-504	-581	-659	-941
										0.053	0.062	0.071	0.08	0.088		0.03*	0.034	0.04	0.046	0.053	
32.5	101	109	-315	-355	-394	-434	-473	-512	-552	-483	-564	-644	-724	-803	-1117	-389	-473	-558	-641	-724	-1031
										0.058	0.068	0.077	0.087	0.096		0.031	0.038	0.045	0.051	0.058	
35.0	110	126	-340	-382	-425	-467	-509	-552	-594	-523	-609	-694	-779	-864	-1203	-427	-518	-608	-696	-784	-1117
										0.063	0.073	0.083	0.093	0.103		0.034	0.041	0.049	0.056	0.063	
37.5	119	144	-364	-409	-455	-500	-546	-591	-637	-559	-650	-741	-830	-921	-1287	-463	-559	-654	-747	-839	-1200
										0.067	0.078	0.089	0.099	0.11		0.037	0.045	0.052	0.06	0.067	
40.0	128	163	-388	-437	-485	-534	-582	-631	-679	-594	-689	-784	-879	-974	-1366	-496	-597	-696	-794	-890	-1278
										0.071	0.083	0.094	0.105	0.117		0.04	0.048	0.056	0.063	0.071	
42.5	137	182	-412	-464	-516	-567	-619	-670	-722	-626	-725	-825	-924	-1024	-1444	-528	-633	-736	-838	-938	-1355
										0.075	0.087	0.099	0.111	0.123		0.042	0.051	0.059	0.067	0.075	
Configuration: 47-MN																					
32.5	95	96	-315	-355	-394	-434	-473	-512	-552	-441	-517	-592	-667	-740	-1065	-357	-428	-506	-585	-662	-979
										0.053	0.062	0.071	0.08	0.089		0.03*	0.034	0.04	0.047	0.053	
35.0	103	111	-340	-382	-425	-467	-509	-552	-594	-482	-563	-643	-723	-802	-1152	-388	-472	-557	-640	-723	-1066
										0.058	0.067	0.077	0.087	0.096		0.031	0.038	0.045	0.051	0.058	
37.5	112	127	-364	-409	-455	-500	-546	-591	-637	-520	-606	-691	-775	-859	-1237	-424	-515	-604	-692	-779	-1150
										0.062	0.073	0.083	0.093	0.103		0.034	0.041	0.048	0.055	0.062	
40.0	120	143	-388	-437	-485	-534	-582	-631	-679	-554	-645	-734	-823	-913	-1316	-458	-553	-647	-740	-832	-1229
										0.066	0.077	0.088	0.099	0.109		0.037	0.044	0.052	0.059	0.066	
42.5	129	161	-412	-464	-516	-567	-619	-670	-722	-587	-682	-775	-869	-963	-1394	-490	-590	-688	-785	-880	-1307
										0.07	0.082	0.093	0.104	0.115		0.039	0.047	0.055	0.063	0.07	
45.0	137	179	-437	-491	-546	-600	-655	-710	-764	-618	-716	-814	-913	-1012	-1469	-520	-624	-726	-827	-926	-1381
										0.074	0.086	0.098	0.109	0.121		0.042	0.05	0.058	0.066	0.074	

CM10 Active Chilled Beam Selection Tables

CM10-0800.262 900mm Long 1-way Active Chilled Beam 2-pipe

Primary Air L/s	Supply Air L/s	Static Pressure Pa	Primary Air Cooling (W)							Secondary Water $\Delta T = 2K$					Q_s (W)	Secondary Water $\Delta T = 3K$					Q_s (W)
			$\Delta T_{PA} (T_{Room} - T_{Primary Air})$							Secondary Air Cooling (W)						Secondary Air Cooling (W)					
			8	9	10	11	12	13	14	Secondary Water Flow (L/s)						Secondary Water Flow (L/s)					
$\Delta T_{SCA} (T_{Room} - T_{Entering Secondary Water})$							$\Delta T_{SCA} (T_{Room} - T_{Entering Secondary Water})$					$\Delta T_{SCA} (T_{Room} - T_{Entering Secondary Water})$									
8	9	10	11	12	13	14	8	9	10	11	12	8	9	10	11	12					
Configuration: 22-SN																					
12.5	54	124	-121	-136	-152	-167	-182	-197	-212	-238	-281	-330	-378	-426	-512	-221	-255	-289	-323	-357	-471
										0.03*	0.034	0.04	0.045	0.051		0.03*	0.03*	0.03*	0.03*	0.03*	
15.0	67	177	-146	-164	-182	-200	-218	-237	-255	-318	-379	-439	-498	-557	-657	-277	-319	-362	-417	-478	-580
										0.038	0.045	0.053	0.06	0.067		0.03*	0.03*	0.03*	0.033	0.038	
Configuration: 26-SN																					
12.5	48	90	-121	-136	-152	-167	-182	-197	-212	-195	-223	-251	-291	-331	-433	-181	-209	-237	-265	-293	-419
										0.03*	0.03*	0.03*	0.035	0.04		0.03*	0.03*	0.03*	0.03*	0.03*	
15.0	59	128	-146	-164	-182	-200	-218	-237	-255	-257	-309	-361	-413	-464	-579	-237	-273	-310	-346	-386	-528
										0.031	0.037	0.043	0.049	0.056		0.03*	0.03*	0.03*	0.03*	0.031	
17.5	71	172	-170	-191	-212	-234	-255	-276	-297	-330	-392	-453	-513	-573	-708	-284	-328	-371	-432	-494	-626
										0.04	0.047	0.054	0.062	0.069		0.03*	0.03*	0.03*	0.035	0.04	
Configuration: 30-SN																					
12.5	45	68	-121	-136	-152	-167	-182	-197	-212	-170	-194	-218	-242	-274	-400	-158	-182	-206	-230	-255	-388
										0.03*	0.03*	0.03*	0.03*	0.033		0.03*	0.03*	0.03*	0.03*	0.03*	
15.0	55	97	-146	-164	-182	-200	-218	-237	-255	-228	-266	-312	-359	-405	-530	-212	-245	-277	-310	-343	-495
										0.03*	0.032	0.037	0.043	0.049		0.03*	0.03*	0.03*	0.03*	0.03*	
17.5	66	131	-170	-191	-212	-234	-255	-276	-297	-290	-346	-403	-458	-513	-658	-258	-298	-337	-378	-434	-592
										0.035	0.042	0.048	0.055	0.062		0.03*	0.03*	0.03*	0.03*	0.035	
20.0	76	169	-194	-218	-243	-267	-291	-315	-340	-351	-416	-480	-543	-605	-771	-298	-344	-395	-461	-526	-686
										0.042	0.05	0.057	0.065	0.072		0.03*	0.03*	0.032	0.037	0.042	
Configuration: 22-MN																					
17.5	64	126	-170	-191	-212	-234	-255	-276	-297	-275	-330	-384	-438	-491	-639	-249	-287	-325	-363	-413	-580
										0.033	0.04	0.046	0.053	0.059		0.03*	0.03*	0.03*	0.03*	0.033	
20.0	74	163	-194	-218	-243	-267	-291	-315	-340	-337	-400	-462	-523	-584	-753	-289	-333	-378	-442	-505	-669
										0.04	0.048	0.055	0.063	0.07		0.03*	0.03*	0.03*	0.035	0.04	
Configuration: 25-MN																					
15.0	50	73	-146	-164	-182	-200	-218	-237	-255	-193	-220	-248	-286	-326	-466	-179	-207	-234	-262	-289	-452
										0.03*	0.03*	0.03*	0.034	0.039		0.03*	0.03*	0.03*	0.03*	0.03*	
17.5	60	99	-170	-191	-212	-234	-255	-276	-297	-242	-288	-338	-387	-436	-593	-225	-260	-294	-329	-363	-549
										0.03*	0.035	0.04	0.046	0.052		0.03*	0.03*	0.03*	0.03*	0.03*	
20.0	69	127	-194	-218	-243	-267	-291	-315	-340	-300	-358	-416	-473	-529	-707	-265	-305	-346	-392	-450	-637
										0.036	0.043	0.05	0.057	0.063		0.03*	0.03*	0.03*	0.031	0.036	
22.5	79	159	-218	-246	-273	-300	-328	-355	-382	-354	-419	-483	-547	-610	-811	-300	-346	-399	-465	-531	-727
										0.042	0.05	0.058	0.066	0.073		0.03*	0.03*	0.032	0.037	0.042	
Configuration: 30-MN																					
17.5	54	70	-170	-191	-212	-234	-255	-276	-297	-207	-237	-273	-316	-358	-528	-192	-222	-252	-281	-311	-507
										0.03*	0.03*	0.033	0.038	0.043		0.03*	0.03*	0.03*	0.03*	0.03*	
20.0	63	90	-194	-218	-243	-267	-291	-315	-340	-248	-298	-349	-399	-449	-640	-231	-266	-302	-337	-373	-593
										0.03*	0.036	0.042	0.048	0.054		0.03*	0.03*	0.03*	0.03*	0.03*	
22.5	72	113	-218	-246	-273	-300	-328	-355	-382	-300	-358	-415	-472	-528	-743	-264	-305	-346	-391	-449	-674
										0.036	0.043	0.05	0.057	0.063		0.03*	0.03*	0.03*	0.031	0.036	
25.0	81	138	-243	-273	-303	-334	-364	-394	-425	-346	-410	-473	-536	-598	-837	-295	-340	-389	-454	-519	-753
										0.041	0.049	0.057	0.064	0.072		0.03*	0.03*	0.031	0.036	0.041	
27.5	90	165	-267	-300	-334	-367	-400	-434	-467	-388	-457	-526	-593	-660	-926	-322	-371	-440	-511	-581	-840
										0.046	0.055	0.063	0.071	0.079		0.03*	0.03*	0.035	0.041	0.046	

Water flow value of 0.03* = minimum allowed water flow rate for all ACB models

Q_s value in bold font = Quick Select value based on Room Air—Primary Air ΔT of 12°C & Room Air - Entering Secondary Water ΔT of 10°C for the corresponding primary air quantity and secondary water design ΔT of 2K or 3K

NOTE: Higher or lower secondary coil capacities can be achieved for all ACB models for higher or lower secondary water flow rates and resulting changes in water ΔT . For alternative or more detailed selections at different conditions, primary air quantities or secondary water flow rates; contact Dadanco for assistance.

DISCLAIMER

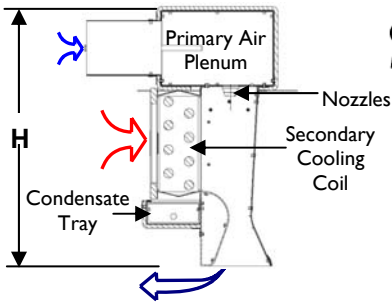
While every effort is made to ensure the details contained herein are kept up to date, in the interests of ongoing product development, Dadanco reserves the right to alter the information without notice

CM10-1100.262 1200mm Long 1-way Active Chilled Beam 2-pipe

Primary Air	Supply Air	Static Pressure	Primary Air Cooling (W)										Secondary Water $\Delta T = 2K$					Secondary Water $\Delta T = 3K$						
			$\Delta T_{PA} (T_{Room} - T_{Primary Air})$										Secondary Air Cooling (W)					Q_s (W)	Secondary Air Cooling (W)					Q_s (W)
			8	9	10	11	12	13	14	Secondary Water Flow (L/s)					Secondary Water Flow (L/s)									
L/s	L/s	Pa	8	9	10	11	12	13	14	8	9	10	11	12	8	9	10	11	12	8	9	10	11	12
Configuration: 30-SN																								
17.5	76	131	-170	-191	-212	-234	-255	-276	-297	-373	-441	-508	-573	-638	-763	-312	-360	-422	-491	-560	-677			
										0.045	0.053	0.061	0.069	0.076		0.03*	0.03*	0.034	0.039	0.045				
20.0	89	169	-194	-218	-243	-267	-291	-315	-340	-458	-536	-614	-690	-766	-905	-368	-447	-527	-608	-687	-818			
										0.055	0.064	0.074	0.083	0.092		0.03*	0.036	0.042	0.049	0.055				
Configuration: 36-SN																								
17.5	67	92	-170	-191	-212	-234	-255	-276	-297	-284	-340	-395	-450	-504	-650	-254	-293	-332	-371	-426	-587			
										0.034	0.041	0.047	0.054	0.06		0.03*	0.03*	0.03*	0.03*	0.034				
20.0	78	119	-194	-218	-243	-267	-291	-315	-340	-370	-437	-503	-569	-633	-794	-310	-358	-418	-487	-555	-709			
										0.044	0.052	0.06	0.068	0.076		0.03*	0.03*	0.033	0.039	0.044				
22.5	89	149	-218	-246	-273	-300	-328	-355	-382	-445	-521	-597	-672	-746	-925	-360	-432	-511	-590	-667	-839			
										0.053	0.062	0.072	0.08	0.089		0.03*	0.035	0.041	0.047	0.053				
Configuration: 28-MN																								
17.5	64	79	-170	-191	-212	-234	-255	-276	-297	-254	-306	-357	-408	-459	-612	-235	-271	-307	-343	-381	-562			
										0.03*	0.037	0.043	0.049	0.055		0.03*	0.03*	0.03*	0.03*	0.03*				
20.0	75	102	-194	-218	-243	-267	-291	-315	-340	-338	-402	-464	-526	-586	-755	-290	-334	-380	-444	-508	-671			
										0.041	0.048	0.056	0.063	0.07		0.03*	0.03*	0.03*	0.036	0.041				
22.5	85	128	-218	-246	-273	-300	-328	-355	-382	-412	-485	-556	-627	-697	-884	-338	-396	-471	-545	-618	-799			
										0.049	0.058	0.067	0.075	0.083		0.03*	0.032	0.038	0.044	0.049				
25.0	96	157	-243	-273	-303	-334	-364	-394	-425	-477	-558	-637	-716	-794	-1001	-383	-467	-551	-634	-715	-915			
										0.057	0.067	0.076	0.086	0.095		0.031	0.037	0.044	0.051	0.057				
Configuration: 32-MN																								
22.5	78	99	-218	-246	-273	-300	-328	-355	-382	-350	-414	-478	-541	-603	-806	-297	-343	-393	-459	-524	-721			
										0.042	0.05	0.057	0.065	0.072		0.03*	0.03*	0.031	0.037	0.042				
25.0	88	122	-243	-273	-303	-334	-364	-394	-425	-416	-489	-561	-632	-702	-925	-340	-400	-475	-550	-624	-839			
										0.05	0.059	0.067	0.076	0.084		0.03*	0.032	0.038	0.044	0.05				
27.5	99	146	-267	-300	-334	-367	-400	-434	-467	-475	-555	-635	-713	-792	-1035	-382	-465	-549	-631	-713	-949			
										0.057	0.067	0.076	0.085	0.095		0.03*	0.037	0.044	0.05	0.057				
Configuration: 35-MN																								
22.5	75	84	-218	-246	-273	-300	-328	-355	-382	-319	-380	-440	-499	-558	-768	-277	-320	-363	-418	-479	-691			
										0.038	0.046	0.053	0.06	0.067		0.03*	0.03*	0.03*	0.033	0.038				
25.0	85	102	-243	-273	-303	-334	-364	-394	-425	-385	-455	-523	-590	-657	-887	-320	-370	-437	-508	-578	-801			
										0.046	0.054	0.063	0.071	0.079		0.03*	0.03*	0.035	0.041	0.046				
27.5	94	123	-267	-300	-334	-367	-400	-434	-467	-444	-521	-596	-671	-745	-996	-359	-431	-510	-589	-666	-910			
										0.053	0.062	0.071	0.08	0.089		0.03*	0.034	0.041	0.047	0.053				
30.0	104	145	-291	-328	-364	-400	-437	-473	-509	-497	-580	-662	-744	-825	-1099	-403	-490	-576	-661	-746	-1013			
										0.06	0.07	0.079	0.089	0.099		0.032	0.039	0.046	0.053	0.06				
Configuration: 38-MN																								
22.5	73	72	-218	-246	-273	-300	-328	-355	-382	-293	-351	-407	-463	-519	-735	-260	-300	-340	-383	-440	-668			
										0.035	0.042	0.049	0.056	0.062		0.03*	0.03*	0.03*	0.031	0.035				
25.0	82	88	-243	-273	-303	-334	-364	-394	-425	-358	-423	-488	-552	-615	-852	-302	-349	-403	-470	-536	-767			
										0.043	0.051	0.059	0.066	0.074		0.03*	0.03*	0.032	0.038	0.043				
27.5	91	105	-267	-300	-334	-367	-400	-434	-467	-416	-489	-561	-632	-702	-961	-340	-400	-475	-550	-624	-875			
										0.05	0.059	0.067	0.076	0.084		0.03*	0.032	0.038	0.044	0.05				
30.0	100	124	-291	-328	-364	-400	-437	-473	-509	-468	-547	-626	-703	-781	-1063	-375	-457	-540	-621	-702	-977			
										0.056	0.066	0.075	0.084	0.094		0.03*	0.037	0.043	0.05	0.056				
32.5	109	145	-315	-355	-394	-434	-473	-512	-552	-515	-601	-685	-769	-853	-1158	-420	-510	-598	-686	-773	-1071			
										0.062	0.072	0.082	0.092	0.102		0.034	0.041	0.048	0.055	0.062				
Configuration: 41-MN																								
27.5	87	91	-267	-300	-334	-367	-400	-434	-467	-382	-451	-518	-585	-652	-918	-318	-367	-433	-503	-573	-833			
										0.046	0.054	0.062	0.07	0.078		0.03*	0.03*	0.035	0.04	0.046				
30.0	96	107	-291	-328	-364	-400	-437	-473	-509	-434	-509	-583	-657	-730	-1020	-352	-420	-497	-575	-651	-934			
										0.052	0.061	0.07	0.079	0.087		0.03*	0.034	0.04	0.046	0.052				
32.5	104	125	-315	-355	-394	-434	-473	-512	-552	-481	-563	-643	-722	-801	-1116	-388	-472	-556	-640	-722	-1029			
										0.058	0.067	0.077	0.087	0.096		0.031	0.038	0.044	0.051	0.058				
35.0	113	144	-340	-382	-425	-467	-509	-552	-594	-525	-611	-697	-782	-867	-1206	-429	-520	-610	-699	-787	-1119			
										0.063	0.073	0.083	0.094	0.104		0.034	0.042	0.049	0.056	0.063				
37.5	122	164	-364	-409	-455	-500	-546	-591	-637	-565	-656	-747	-838	-929	-1293	-468	-565	-660	-754	-847	-1206			
										0.068	0.079	0.09	0.1	0.111		0.037	0.045	0.053	0.06	0.068				
40.0	131	186	-388	-437	-485	-534	-582	-631	-679	-602	-698	-794	-890	-987	-1376	-504	-606	-706	-805	-903	-1288			
										0.072	0.084	0.095	0.107	0.118		0.04	0.048	0.056	0.064	0.072				

CM10-1400.262 1500mm Long 1-way Active Chilled Beam 2-pipe

Primary Air	Supply Air	Static Pressure	Primary Air Cooling (W)							Secondary Water $\Delta T = 2K$					Secondary Water $\Delta T = 3K$						
			$\Delta T_{PA} (T_{Room} - T_{Primary Air})$							Secondary Air Cooling (W) Secondary Water Flow (L/s) $\Delta T_{SCA} (T_{Room} - T_{Entering Secondary Water})$					Secondary Air Cooling (W) Secondary Water Flow (L/s) $\Delta T_{SCA} (T_{Room} - T_{Entering Secondary Water})$						
L/s	L/s	Pa	8	9	10	11	12	13	14	8	9	10	11	12	Q_s (W)	8	9	10	11	12	Q_s (W)
Configuration: 39-SN																					
22.5	96	128	-218	-246	-273	-300	-328	-355	-382	-493	-576	-657	-738	-819	-985	-399	-485	-571	-656	-740	-899
										0.059	0.069	0.079	0.088	0.098		0.032	0.039	0.046	0.052	0.059	
25.0	108	157	-243	-273	-303	-334	-364	-394	-425	-576	-670	-762	-855	-947	-1126	-480	-578	-675	-770	-865	-1039
										0.069	0.08	0.091	0.102	0.113		0.038	0.046	0.054	0.062	0.069	
Configuration: 48-SN																					
22.5	84	86	-218	-246	-273	-300	-328	-355	-382	-377	-446	-513	-579	-645	-841	-315	-364	-428	-497	-566	-756
										0.045	0.053	0.061	0.069	0.077		0.03*	0.03*	0.034	0.04	0.045	
25.0	95	105	-243	-273	-303	-334	-364	-394	-425	-462	-541	-619	-696	-772	-983	-371	-451	-532	-613	-693	-896
										0.055	0.065	0.074	0.083	0.092		0.03*	0.036	0.043	0.049	0.055	
27.5	106	126	-267	-300	-334	-367	-400	-434	-467	-537	-625	-713	-800	-886	-1113	-442	-534	-626	-716	-806	-1026
										0.064	0.075	0.085	0.096	0.106		0.035	0.043	0.05	0.057	0.064	
30.0	117	149	-291	-328	-364	-400	-437	-473	-509	-605	-702	-798	-894	-992	-1235	-507	-610	-710	-809	-907	-1147
										0.072	0.084	0.096	0.107	0.119		0.041	0.049	0.057	0.065	0.072	
Configuration: 53-SN																					
25.0	90	87	-243	-273	-303	-334	-364	-394	-425	-416	-489	-561	-632	-702	-925	-340	-400	-475	-550	-624	-839
										0.05	0.059	0.067	0.076	0.084		0.03*	0.032	0.038	0.044	0.05	
27.5	100	104	-267	-300	-334	-367	-400	-434	-467	-490	-573	-654	-734	-815	-1054	-396	-482	-568	-652	-736	-968
										0.059	0.069	0.078	0.088	0.098		0.032	0.039	0.045	0.052	0.059	
30.0	111	123	-291	-328	-364	-400	-437	-473	-509	-557	-648	-738	-828	-917	-1175	-461	-556	-651	-744	-836	-1088
										0.067	0.078	0.088	0.099	0.11		0.037	0.044	0.052	0.059	0.067	
32.5	122	144	-315	-355	-394	-434	-473	-512	-552	-618	-717	-815	-913	-1012	-1288	-520	-624	-726	-827	-927	-1199
										0.074	0.086	0.098	0.109	0.121		0.042	0.05	0.058	0.066	0.074	
Configuration: 41-MN																					
27.5	95	91	-267	-300	-334	-367	-400	-434	-467	-435	-511	-585	-659	-732	-985	-353	-422	-499	-576	-653	-899
										0.052	0.061	0.07	0.079	0.088		0.03*	0.034	0.04	0.046	0.052	
30.0	105	107	-291	-328	-364	-400	-437	-473	-509	-504	-588	-671	-753	-836	-1108	-409	-497	-585	-671	-756	-1022
										0.06	0.07	0.08	0.09	0.1		0.033	0.04	0.047	0.054	0.06	
32.5	115	125	-315	-355	-394	-434	-473	-512	-552	-566	-658	-750	-841	-932	-1223	-470	-567	-662	-757	-850	-1135
										0.068	0.079	0.09	0.101	0.112		0.038	0.045	0.053	0.06	0.068	
35.0	125	144	-340	-382	-425	-467	-509	-552	-594	-623	-723	-822	-921	-1021	-1331	-526	-630	-733	-835	-935	-1242
										0.075	0.087	0.098	0.11	0.122		0.042	0.05	0.059	0.067	0.075	
Configuration: 44-MN																					
27.5	92	79	-267	-300	-334	-367	-400	-434	-467	-407	-479	-550	-620	-689	-950	-335	-391	-464	-538	-610	-864
										0.049	0.057	0.066	0.074	0.083		0.03*	0.031	0.037	0.043	0.049	
30.0	101	94	-291	-328	-364	-400	-437	-473	-509	-475	-555	-635	-713	-791	-1072	-382	-465	-548	-631	-712	-985
										0.057	0.067	0.076	0.085	0.095		0.03*	0.037	0.044	0.05	0.057	
32.5	111	109	-315	-355	-394	-434	-473	-512	-552	-537	-625	-712	-799	-886	-1185	-441	-534	-625	-716	-805	-1098
										0.064	0.075	0.085	0.096	0.106		0.035	0.043	0.05	0.057	0.064	
35.0	121	126	-340	-382	-425	-467	-509	-552	-594	-594	-689	-784	-879	-974	-1293	-496	-597	-696	-794	-890	-1205
										0.071	0.083	0.094	0.105	0.117		0.04	0.048	0.056	0.063	0.071	
37.5	131	144	-364	-409	-455	-500	-546	-591	-637	-646	-748	-850	-952	-1056	-1396	-547	-655	-761	-865	-968	-1307
										0.077	0.09	0.102	0.114	0.126		0.044	0.052	0.061	0.069	0.077	
Configuration: 50-MN																					
35.0	113	99	-340	-382	-425	-467	-509	-552	-594	-536	-625	-712	-799	-885	-1221	-441	-533	-625	-715	-805	-1134
										0.064	0.075	0.085	0.096	0.106		0.035	0.043	0.05	0.057	0.064	
37.5	122	113	-364	-409	-455	-500	-546	-591	-637	-587	-682	-776	-870	-964	-1322	-490	-590	-688	-785	-881	-1234
										0.07	0.082	0.093	0.104	0.115		0.039	0.047	0.055	0.063	0.07	
40.0	132	127	-388	-437	-485	-534	-582	-631	-679	-635	-736	-836	-937	-1039	-1418	-536	-643	-747	-850	-952	-1329
										0.076	0.088	0.1	0.112	0.124		0.043	0.051	0.06	0.068	0.076	
42.5	141	143	-412	-464	-516	-567	-619	-670	-722	-679	-786	-892	-1000	-1109	-1511	-580	-692	-806	-911	-1018	-1421
										0.081	0.094	0.107	0.12	0.133		0.046	0.055	0.064	0.073	0.081	
45.0	150	159	-437	-491	-546	-600	-655	-710	-764	-720	-833	-946	-1060	-1176	-1601	-620	-738	-853	-967	-1080	-1508
										0.086	0.1	0.113	0.127	0.141		0.05	0.059	0.068	0.077	0.086	
Configuration: 53-MN																					
37.5	118	101	-364	-409	-455	-500	-546	-591	-637	-553	-643	-732	-821	-910	-1278	-456	-551	-645	-737	-829	-1191
										0.066	0.077	0.088	0.098	0.109		0.036	0.044	0.052	0.059	0.066	
40.0	127	114	-388	-437	-485	-534	-582	-631	-679	-600	-696	-792	-887	-983	-1374	-502	-604	-704	-802	-899	-1286
										0.072	0.083	0.095	0.106	0.118		0.04	0.048	0.056	0.064	0.072	
42.5	135	128	-412	-464	-516	-567	-619	-670	-722	-644	-746	-848	-950	-1054	-1467	-546	-653	-759	-863	-966	-1378
										0.077	0.089	0.102	0.114	0.126		0.044	0.052	0.061	0.069	0.077	
45.0	144	143	-437	-491	-546	-600	-655	-710	-764	-686	-793	-901	-1010	-1120	-1556	-586	-699	-810	-920	-1028	-1465
										0.082	0.095	0.108	0.121	0.134		0.047	0.056	0.065	0.073	0.082	
47.5	153	158	-461	-519	-576	-634	-691	-749	-807	-725	-838	-952	-1067	-1184	-1643	-625	-743	-859	-973	-1087	-1550
										0.087	0.1	0.114	0.128	0.142		0.05	0.059	0.069	0.078	0.087	
50.0	162	174	-485	-546	-606	-667	-728	-788	-849	-762	-880	-1000	-1121	-1243	-1728	-661	-783	-904	-1024	-1143	-1632
										0.091	0.105	0.12	0.134	0.149		0.053	0.063	0.072	0.082	0.091	



STARLINE



1-Way Discharge Ceiling Mounted Unit

CM10 2-Pipe Secondary Cooling Coil water pressure drop, kPa

Unit	Water Flow in L/s												
	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.1	0.11	0.12	0.13	0.14	0.15
CM10-0800.242 4TH (900mm Long)	0.9	1.5	2.2	3.2	4.0	5.0	6.2	7.4	8.8	10.2	11.8	13.4	15.1
CM10-0800.262 6TH (900mm Long)	1.4	2.3	3.3	4.6	6.0	7.6	9.3	11.2	13.2	15.3	17.6	20.1	22.6
CM10-1100.242 4TH (1200mm Long)	1.1	1.9	2.7	3.8	4.9	6.2	7.7	9.2	10.9	12.7	14.6	16.7	18.8
CM10-1100.262 6TH (1200mm Long)	1.7	2.8	4.1	5.6	7.4	9.4	11.5	13.8	16.4	19.1	22.0	25.0	28.3
CM10-1400.242 4TH (1500mm Long)	1.3	2.2	3.2	4.5	5.9	7.4	9.1	11.0	13.0	15.2	17.5	20.0	22.6
CM10-1400.262 6TH (1500mm Long)	2.0	3.3	4.9	6.7	8.8	11.1	13.7	16.5	19.6	22.8	26.3	30.0	33.9

Acoustic Data

CM10 Summary - October 2011										
	63	125	250	500	1K	2K	4K	8K	Guidance Lp	
									NR	dB(A)
150mm 'Side Entry' spigot	Lw - Sound Power level (zero weighted) dB									
Primary Air - L/s										
25		48	45	34	28	24	25	26	29	34
30		48	44	39	33	26	25	26	29	35
35		38	42	39	38	26	25	26	32	35
40		45	42	40	37	29	26	26	33	36
45		45	41	43	40	34	28	27	34	39
50		45	44	44	43	37	31	28	37	41
55		45	45	45	45	40	35	29	39	42
100mm 'End Entry' spigot	Lw - Sound Power level (zero weighted) dB									
Primary Air - L/s										
25		50	39	35	33	24	25	26	27	34
30		40	37	35	37	26	25	26	31	34
35		40	37	37	40	26	26	26	34	35
40		47	40	42	38	30	26	26	34	38
45		47	41	43	43	34	28	27	37	40
50		47	44	46	45	37	33	29	39	42
55		47	45	47	46	40	36	32	40	43
Measured Reverberation Time (Sec)		0.77	0.93	1.15	1.15	1.19	1.11	0.65		

Date: 20th October 2011

Room Dimensions: 8.72 x 3.92 x 2.7 (92.3m³)

Room Conditions: 23C, 42% RH, 1013 hPa

All measurements recorded in position "A" 1.2 m from both rear and side wall with microphone position 1.2m above floor level.

Sound Level Meter CEL 621C s/n 471171

Microphone CEL 251 s/n 877

Last calibration: 28th June 2011

DISCLAIMER

While every effort is made to ensure the details contained herein are kept up to date, in the interests of ongoing product development, Dadanco reserves the right to alter the information without notice



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